

WHAT IS CLAIMED IS:

1. A releasable medical line connector system, comprising:  
an adaptor comprising an elongated tubular portion;  
5 a connector fitting comprising an elongated body, at least a portion of which is adapted to insert into the tubular portion of the adaptor, and at least one radially extending member disposed upon the elongated body, the at least one radially extending member having at least one contact surface; and  
a spin nut comprising a generally tubular body slidably and rotatably  
10 disposed upon the elongated body of the connector fitting, and a receptacle disposed distally upon the spin nut having an internal cross section, the receptacle having at least one contact surface disposed proximally of the distal end of the spin nut, the at least one contact surface configured and arranged to interact with the at least one contact surface of the spin nut when the receptacle  
15 receives at least a portion of the radially extending member so as to transfer both axial and rotational forces between the spin nut and the connector fitting.
2. A connector system as in Claim 1 further comprising a retainer having a channel that extends through the retainer along a longitudinal axis, and at least one slot  
20 which receives the at least one radial member of the connector fitting in order to secure the fitting in position upon the retainer.
3. A system as in Claim 1 wherein the adaptor further comprises a first screw thread disposed upon an outer surface of the elongated tubular portion and the  
25 spin nut further comprises a second screw thread disposed upon an inner surface of the spin nut.
4. A system as in Claim 3 wherein the spin nut is slidable between at least a proximal position and a distal position, and wherein the second screw thread of the spin  
30 nut is configured to engage the first screw thread of the adaptor when the tapering portion of the connector fitting is inserted into the tubular portion of the adaptor and the

spin nut is in the proximal position, and wherein the receptacle of the spin nut is configured to engage the radially extending member of the connector fitting when the spin nut is in the distal position.

5           5.       A system as in Claim 4 wherein the engagement between the spin nut and the radially extending member when the spin nut is in the distal position provides transfer of distally directed force from the spin nut to the connector fitting and provides transfer of rotational torque from the spin nut to the connector fitting.

10           6.       A system as in Claim 1 wherein a greatest radius of the radially extending member is greater than a least radius of the receptacle.

15           7.       A system as in Claim 1 wherein the adaptor is disposed upon the distal end of a catheter.

            8.       A system as in Claim 1 wherein the connector fitting is disposed upon the proximal end of a medical line.

20           9.       A system as in Claim 1 wherein the connector fitting includes a second radially extending member which cooperates with a slot of an anchoring system.

25           10.      A system as in Claim 1 wherein the engagement between the spin nut and the connector fitting when the spin nut is in the distal position transfers rotational motion between the spin nut and the connector fitting so that the spin nut and connector fitting rotate together.

            11.      A system as in Claim 1 wherein the engagement between the spin nut and the connector fitting when the spin nut is in the distal position inhibits distal motion of the spin nut relative to the connector fitting.

30           12.      A system as in Claim 1 wherein the external cross section of the radially extending member of the medical line adaptor has a generally hexagonal shape.

13. A system as in Claim 1 wherein the internal cross section of the receptacle of the spin nut has a generally hexagonal shape.

5 14. A system as in Claim 1 wherein the internal cross section of the receptacle of the spin nut has a star shape.

15. A system as in Claim 14 wherein the internal cross section of the receptacle of the spin nut has twelve points.

10 16. A releasable medical line connector system, comprising:

an adaptor comprising an elongated tubular portion;

a connector fitting comprising an elongated body, at least a portion of which is adapted to insert into the tubular portion of the adaptor, and at least one radially extending member disposed upon the elongated body and having an external cross section which varies radially about its circumference; and

15 a spin nut comprising a generally tubular body slidably and rotatably disposed upon the elongated body of the connector fitting, and a receptacle disposed distally upon the spin nut having an internal cross section which varies radially about its circumference,

20 at least a portion of the radially extending member of the connector fitting being adapted to be inserted into the receptacle of the spin nut, said portion extending entirely around the axis of the fitting elongated body

25 17. A connector fitting as in Claim 16 in combination with a retainer comprising a channel that extends through the retainer along a longitudinal axis, and at least one slot which receives the radial member of the connector fitting in order to secure the fitting in position upon the retainer.

30 18. A fitting as in Claim 16 wherein the engagement between the spin nut and the radial member when the spin nut is in the distal position provides transfer of

distally directed force from the spin nut to the adaptor and provides transfer of rotational torque from the spin nut to the adaptor.

19. A fitting as in Claim 16 wherein the adaptor is disposed upon the proximal end of a medical line.

20. A fitting as in Claim 16 wherein the engagement between the spin nut and the adaptor when the spin nut is in the distal position inhibits rotational motion between the spin nut and the adaptor.

21. A fitting as in Claim 16 wherein the engagement between the spin nut and the adaptor when the spin nut is in the distal position inhibits distal motion of the spin nut relative to the adaptor.

22. A method of releasably securing a medical line to an adaptor comprising:  
providing a connector fitting having at least one radial member and a tapering proximal portion;

providing a spin nut having a distal receptacle and disposed upon the connector fitting and having two positions, a first position and a second position;

inserting the proximal portion of the connector fitting into the adaptor;

moving the spin nut to the first position;

securing the proximal portion of the connector fitting to the adaptor by twisting the spin nut;

unlocking the connector fitting from the adaptor by twisting the spin nut;

moving the spin nut to the second position; and

twisting and distally pulling the spin nut to release the medical line from the adaptor.

23. A method as in Claim 22 wherein moving the spin nut to the second position further comprises moving the distal receptacle of the spin nut onto the radial member of the connector fitting.

24. A method as in Claim 22 wherein twisting and pulling the spin nut causes the connector fitting to be twisted and distally pulled relative to the adaptor.

25. A method as in Claim 22 further comprising:

5 providing an anchoring system having a retainer with a central channel and at least one slot sized to receive a portion of the radial member of the connector fitting; and

inserting the connector fitting into the channel of the retainer of the anchoring system such that the slot of the retainer engages the radial member of  
10 the connector fitting to inhibit lateral and longitudinal motion of the connector fitting relative to the retainer.

26. An anchoring system for use with a medical device, comprising:

15 a fitting comprising an elongated body and at least one radial member disposed upon the elongated body, and a slidable element disposed upon the elongated body, the radial member having a radius which varies about at least a portion of the elongated body, and the slidable element having a receptacle which receives at least a portion of the radial member; and

20 a retainer comprising a channel that extends through the retainer along a longitudinal axis, the channel sized to receive at least a portion of the elongated body, and at least one slot which receives the radial member of the fitting in order to secure the fitting in position upon the retainer.

27. A releasable medical line connector system, comprising:

25 an adaptor comprising an elongated tubular portion;

a connector fitting comprising an elongated body having an external radius  $R_1$ , at least a portion of which is adapted to insert into the tubular portion of the adaptor, and at least one radially extending member disposed upon the elongated body, the at least one radially extending member having at least one  
30 contact surface, and the at least one radially extending member having a maximum radius  $R_2$ ; and

a spin nut comprising a generally tubular body slidably and rotatably disposed upon the elongated body of the connector fitting, and a receptacle disposed distally upon the spin nut having an internal cross section, the receptacle having at least one contact surface, the at least one contact surface configured and arranged to interact with the at least one contact surface of the spin nut when the receptacle receives at least a portion of the radially extending member so as to transfer both axial and rotational forces between the spin nut and the connector fitting, the spin nut having an external radius  $R_3$ , the radii  $R_1$ ,  $R_2$  and  $R_3$  are sized such that  $R_3 - R_2 < R_2 - R_1$ .

28. A connector fitting for releasably securing a medical line to an adaptor with a tubular portion, the fitting comprising:

an elongated body, at least a portion of which is adapted to insert into the tubular portion of the adaptor, and at least one radially extending member disposed upon the elongated body, the at least one radially extending member having at least one contact surface; and

a spin nut comprising a generally tubular body slidably and rotatably disposed upon the elongated body, a second screw thread disposed upon an inner surface of the spin nut, and a receptacle disposed distally upon the spin nut having an internal cross section, the receptacle having at least one contact surface disposed proximally of the distal end of the spin nut, the at least one contact surface configured and arranged to interact with the at least one contact surface of the spin nut when the receptacle receives at least a portion of the radially extending member so as to transfer both axial and rotational forces between the spin nut and the connector fitting.

29. A connector fitting as in Claim 28 in combination with a retainer comprising a channel that extends through the retainer along a longitudinal axis, and at least one slot which receives the at least one radial member of the connector fitting in order to secure the fitting in position upon the retainer.

30. A connector fitting for releasably securing a medical line to an adaptor, the fitting comprising:

an elongated body with at least one radially extending member disposed upon the elongated body; and

5 a spin nut comprising a generally tubular body slidably and rotatably disposed upon the elongated body, a second screw thread disposed upon an inner surface of the spin nut, and a receptacle disposed distally upon the spin nut having an internal cross section which varies radially about its circumference,

at least a portion of the radially extending member being adapted to be  
10 inserted into the receptacle of the spin nut, said portion extending entirely around the axis of the elongated body.

31. A connector fitting as in Claim 30 in combination with a retainer comprising a channel that extends through the retainer along a longitudinal axis, and at  
15 least one slot which receives the at least one radial member of the connector fitting in order to secure the fitting in position upon the retainer.

32. A releasable medical line connector system, comprising:

an adaptor comprising an elongated tubular portion;

20 a connector fitting comprising an elongated body, at least a portion of which is adapted to insert into the tubular portion of the adaptor, and at least one radially extending member disposed upon the elongated body, the at least one radially extending member having an external cross section which forms a polygon; and

25 a spin nut comprising a generally tubular body slidably and rotatably disposed upon the elongated body of the connector fitting, and a receptacle disposed distally upon the spin nut having an internal cross section which varies radially about its circumference.

30 33. A medical line connector system as in Claim 32 wherein the external cross section of the at least one radially extending member is a hexagon.

34. A connector fitting for releasably securing a medical line to an adaptor having a tubular portion, the connector fitting comprising:

an elongated body, at least a portion of which is configured to be inserted into the tubular portion of the adaptor, and the elongated body having at least one radially extending member disposed upon the elongated body, the at least one radially extending member having multiple contact surfaces; and

a spin nut comprising a generally tubular body slidably and rotatably disposed upon the elongated body, and having at least one contact surface disposed upon the spin nut and configured to interact with the multiple contact surfaces of the radially extending member so as to transfer a rotational force between the spin nut and the radially extending member.

35. A fitting as in Claim 34 wherein the at least one contact surface of the spin nut is disposed upon a distal end of the spin nut.

36. A fitting as in Claim 34 wherein the spin nut further comprises a receptacle disposed distally upon the spin nut and wherein the at least one contact surface of the spin nut is disposed within the receptacle of the spin nut.

37. A connector fitting for releasably securing a medical line to an adaptor having a tubular portion, the connector fitting comprising:

an elongated body, at least a portion of which is configured to be inserted into the tubular portion of the adaptor, the elongated body having at least one radially extending member disposed upon the elongated body, the radially extending member having multiple contact surfaces; and

a spin nut comprising a generally tubular body slidably and rotatably disposed upon the elongated body, and having multiple contact surfaces disposed upon the spin nut, the multiple contact surfaces of the spin nut configured to interact with the multiple contact surfaces of the radially extending member so as to transfer a rotational between the spin nut and the radially extending member.